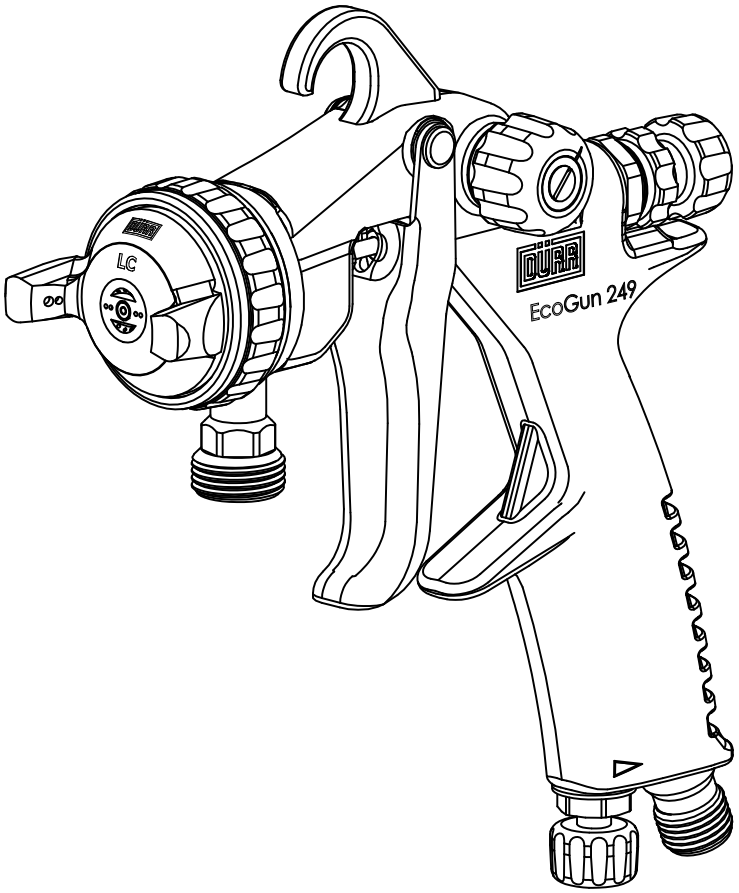
OPERATION MANUAL

EcoGun 249

air spray gun



II 2 GX

These spray guns have been engineered for professional use. Read and understand this operation manual before operating, doing any service or maintenance procedure. Incorrect use may result in serious personal injury or damage to the spray gun.

EC-DECLARATION OF CONFORMITY

PRODUCT

NAME:	Low pressure manual spray gun
TYPE:	EcoGun 119, EcoGun 249 and their modifications
VARIANTS:	—
USAGE:	Liquid paint coating

COMPLIES WITH
European directives

2006/42/EC; 94/9/EC; 2003/10/EC; 2002/44/EC

STANDARDS USED

EN ISO 5349-1; EN ISO 12100; EN 13463-1; EN ISO 13732; EN 1953+A1; EN 1127-1; EN ISO 3746

ATEX
94/9/EC

Clan: **II** Category: **2** Mark: Ⓔx II 2G X

Notified body: **NB 1026 – FTZÚ, Ostrava, CZ**
Tech. File:

DECLARATION

We are declaring and taking the responsibility that the properties and parameters of the equipment meet the safety requirements and the technical requirements, and that the equipment is safe and meets all the above stated requirements.

Manufacturer has a certification for quality system management according to: EN ISO 9001:2009.

APPROVED BY

Ing. Jan Hevessy
CEO & Chairman of the board

In Ledeč nad Sázavou
Date: 12. 9. 2014

Dürr Systems Czech Republic a.s.
Podolí 1237
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CZECH REPUBLIC

VAT code: CZ 25 25 37 35

CONTENTS

SAFETY REGULATIONS

Appropriate standards apply to spraying and handling with flammable liquids. Areas and rooms, where coating materials are handled with, shall be identified and adapted regarding the flammability of the coating materials in compliance with applicable standards and regulations.

In case the spraying guns are used and operated in other countries, then relevant national standards and regulations apply.

Electrostatic charge (electricity) can occur under certain circumstances due to flow of air and liquids. During discharge it may result in sparking and/or flaming.

To prevent such situation it is necessary to use hoses with guaranteed electrostatic drop-in particularly for coating materials with ignition point below 21°C (nitro-, acetone coating materials etc.) and some coating materials of 2nd flammability class preheated to higher temperature - it is necessary to ensure certified hoses with such identification.

CAUTION

Do not use the basic variants of the guns for solvents from chlorohydrocarbon family, as e.g. 1.1.1. trichlorethan and metylchloride may cause chemical reaction with aluminium and with galvanized, resp. zinc-coated parts and thus create explosive mixture with eventual explosion effect.

Vibrations and noise

The vibration level transferred to hands does not exceed maximum allowed value acc. to NV 272/2011 Coll.

The noise level depends on size of nozzle system and on input pressure value, which ranges from 80 to 90dB(A). Allowed permitted nose level acc. to act no. 272/2011 Coll. is 85dB(A) and thus it is necessary to use hearing protection equipments.

Work with gun

The spraying gun operates with air pressure up to 6 bar, air pressure - recommended 2.5-3,5 bar. Do not focus the gun to yourself, other persons or animals. Solvents and thinners may cause chemical burn. During nozzle assembly, disassembly, cleaning or each interruption of work proceed very carefully and ensure locking of the gun to prevent eventual starting. Thus you may prevent the injury. Before any repair the gun shall be disconnected from the pressure air and applied material.

CAUTION

All persons authorised to operation ad maintenance of the equipment must be provably acquainted with the safety regulations and with the operation and maintenance manual for the equipment.

Personal protection during work

During spraying and handling with the application materials and during cleaning of the equipment follow instructions and recommendation of manufacturers of particular materials. Use suitable work protection aids to protect skin, respiratory tract and eyes (clothes, gloves, respirators protecting masks, resp. breathing apparatuses, goggles, protection creams etc.).

EQUIPMENT USE AND DESCRIPTION

EcoGun 249 air spraying gun is a gun with lower pressure supply of the material. The gun features complete stain-less path for applied material.

Atomising system with decreased pressure of atomising air at the gun jet mouth, similar to RP system.

The gun features very good grip and balance in hand, as well as easy less wearisome handling. Assembly threads of connecting elements are glued with suitable sealing compound (LOCTITE 542).

The spraying gun can handle all types of coating materials, which are intended to application by spraying, and whose chemical composition does not disturb the spraying gun components. Recommended distance of nozzle mouth to the sprayed surface (spraying distance) depends on side of nozzle assembly and type of coating material, it ranges from 150 to 190 mm.

Semi-automatic needle seal ensures maximum period of maintenance-free and reliable operation of the seal. Mechanical re-tightening of the needle seal enables increased interval between service repairs. The system joints advantages of automatic and mechanical design of the needle seal re-tightening.

Options EcoGun 249

Option EcoGun 249, with air cap LP, is equipped with nozzle setups No. 08LP, 10LP or 12LP. Is designed especialy for high-quality surface finish in the automotive industry.

Option EcoGun 249, with air cap LC, is equipped with nozzle setups No. 14LX, 16LX, 18LX, 20LX or 22LX. Is designed for the application of a wide range of applies materials by air spraying in the industry , car varnishing workshops, plastic industry, wood processing, keramic industry , particularly for the application of base paints where an increased output of the sprayer is necessary.

EcoGun 249 spraying gun

This type of the gun can handle following types of the coating materials:

Solvent-based – synthetic, nitro, acetone, polyurethane, epoxy and acrylic, primers, fillers and finish varnishes

Water-based – acrylic, silicate, silicone and polyurethane substances

and other application materials of similar properties.

Work environment IE 72 acc. to ČSN – EN 60721-3-7.

Air path - used material

Gun body	Al alloy with Ni surface layer
Sealing elements	POM, PE, PTFE
Parts	Stainless steel, brass

Coating material path - used material

Gun body	Lined stainless steel AISI 304
Sealing elements	PTFE
Parts	Stainless steel AISI 304

Advantages of new gun

- Progressive design and ergonomic shape of the gun body guarantee very good grip
- Extremely light gun of weight only 521 g, and in standard variant only 544 g.
- High transfer efficiency exceeding legislative requirements related to the environment
- New atomising system with decreased atomising output pressure at the jet mouth, high atomisation fineness and beam distribution quality
- New series of modernized nozzle assemblies
- New ergonomic control elements of completely totally new design
- Normally supplied nozzle assemblies featuring perfect tightness
- Special gun body surface treatment guarantees perfect cleanability
- Gun body sealing system made from very resistant materials guarantees resistance against cleaning in washing machines
- New PTFE sealing elements
- Semi-automatic gland increasing operation life
- High resistance against solvents
- High inspection level of each product

TECHNICAL PARAMETERS

Maximum allowed input air overpressure .....6 bar
Operating air pressure - recommended* ..... 2,5-3,5 bar
Maximum pressure of applied material .....6 bar
Air consumption .....130-410 Nl.min^{-1}
Power range of sprayed coating material* ..... g.min^{-1}
Spraying distance* .....150-190 mm
Air quality:
– Max. dew point.....+3°C
– Max. oil content.....1 mg/m^3
– Max. size of solid particles.....5 µm
– Max. temperature .....+40°C
Gun weight(standard) .....521 g
Connecting sizes
– Air supply .....G 1/4"
– Supply of coating material .....G 3/8"
Environment classification 

* It depends on size of nozzle assembly and type of coating material

COMMISSIONING

Before commissioning the gun must be cleaned from preservative substances by suitable degreasing agent – flush the gun with solvent suitable for the coating material to be applied.

The gun is factory adjusted and prime-sprayed (quality test).

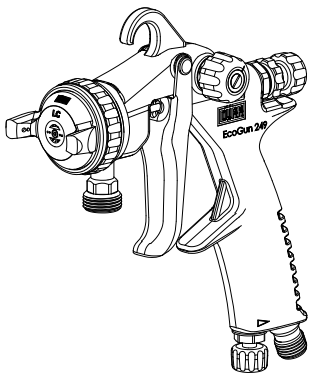
Pressure air is to be supplied through following hose:

» up to 10 meters -nominal inner diameter 8 mm
» over 10 meters - nominal inner diameter 9,5 mm

Options for coating material supply

EcoGun 249 model spraying gun features following supply options:

» Lower supply -Fluid connector AM 38 (fitting G 3/8")



Direct connection of air quick-couplings to the gun

The gun design enables connection of air quick-couplings to the gun. The air input fitting may house the quick-coupling mandrel, e.g. type SFIW 13 from RECTUS.

The manufacturer recommends to use brand quick-couplings with low pressure loss and long operating life.

The quick-couplings may be used to the air inlet only during application of water-based coating materials, which do not require electro-static drop-in.

ADJUSTING OF GUN

The gun does not require any adjustment, when basic maintenance requirements are followed. Each gun is factory adjusted and prime-spayed. Upon disassembly and reassembly due to replacement of the nozzle assembly or worn components it is necessary to inspect adjustment of following elements.

Advance timing adjustment

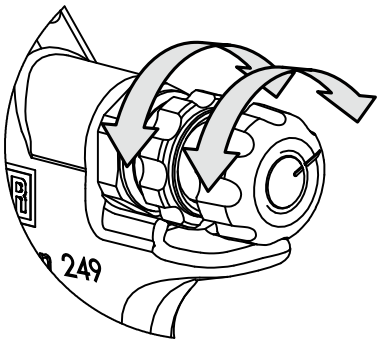
» **Start of air before opening of coating material outlet** Reproduction of Dürr Systems Czech Republic component quality ensures that the advance timing is permanently set during common replacement of the nozzle set and d not require any adjustment.

» **Needle gland** is tightened semi-automatically with possible manual tightening.

OPERATION

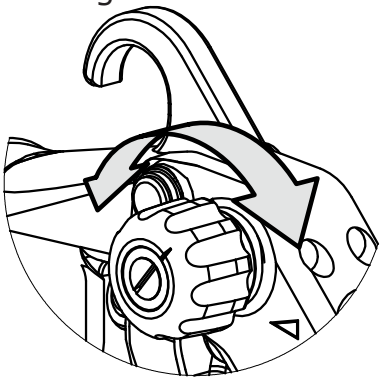
Important prerequisite of the high-quality proper function is proper maintenance. The gun is designed in such manner that the requirements may be easily adhered to.
The nozzle assemblies are made from stainless steel AISI 304 and they are delivered as spare parts as complete nozzle with needle. To achieve high-quality spraying it is necessary to take care of cleanness of the nozzle assembly, prevention of nozzle neck damage, cleanness and integrity of very precise holes in the air jet. Upon replacing or cleaning of the nozzle it shall be properly tightened to make it tight. Recommended torque on the nozzle is 10 Nm.
The gun is factory adjusted and prime-sprayed (quality test).

Control of coating mataerial amount



This regulation restricts the lift of the needle which throttles the flow of material in the nozzle. By loosening the locking nut (38) and subsequently turning the stop screw (20), the lift of the needle and the volume the material is changed. After reaching the lift of the locking nut (38), tighten it again. We recommend using this method only temporarily. A more suitable manner is to select a smaller nozzle set or reducing the pressure of the sprayed air (if it will not reduce the quality of the spraying). Fully tightening of the stop bolt will prevent the lift of the needle and any undesired spraying during handling.

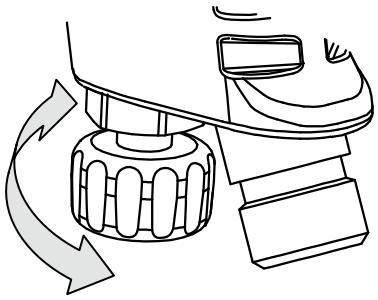
Control of spray shape



Air runs out of the wing holes in the air jet and the air widens the beam shape. Its amount is controlled by turning of the control wheel. Left-side turning increases supplied air amount and enlarges the beam.

Control of air supply to gun

This control (7) is located on the gun butt and enables throttling the air supply amount to gun and thus the operator can decrease the air amount for spraying, resp. completely stop the supply, without any handling on the air control in distribution lines.

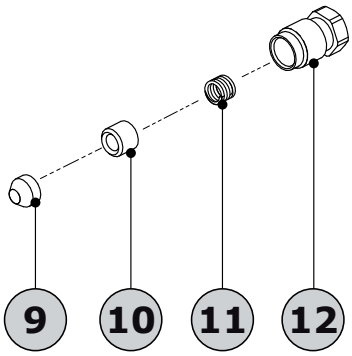


Replacement of nozzle assembly

After dismantling the stop bolt (20) and the securing nut (38), remove the spring of the needle (18) with the bearing of the needle (19) and the needle (2). For easier handling, press the lever which will suppress the needle from the rear part of the gun. Remove the nozzle from the front part of the gun by unscrewing (1). Dismantle the nozzle from the gun by the attached wrench (41). Before assembly of a new nozzle set, it is recommended to clean the assembly areas. Attach the new nozzle and fully tighten. The recommended tightening moment on the nozzle is 10 Nm. Behind the gun, insert the needle with spring and bearing, and replace the locking nut, bolt stop and nozzle.

Replacement of needle gland

Upon any leakage it is necessary to re-tighten the gland (9) by the gland screw (12) by clockwise rotation of the screw to condition, where the gland is again tight. In case the gland screw cannot rotate and the gland still leaks, the gland shall be replaced for a new one. Unscrew the gland screw (12) and remove the old gland assembly. Before installation o new gland clean the gland area. Insert new gland (9), spring guide (10) and gland spring (11) from the needle sealing set. Tighten the gland screw to ensure proper tightness of the gland.

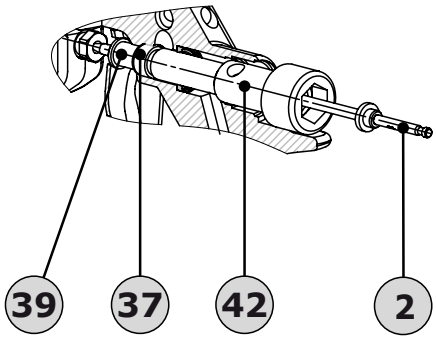


Replacement of air valve sealing

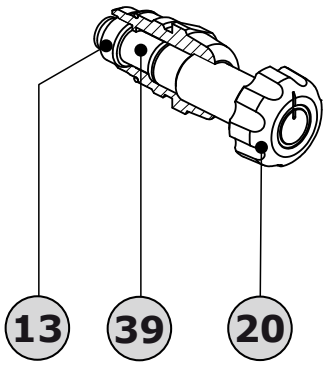
» **Disassembly: (pic. a)** Disassemble the end stop screw (20) and locking nut (38) with spring (18), bearing (19) and needle (2). Use wrench (41) to disassemble the control bushing (17) with spring (16) from the gun. Press lever to insert the pin (15) to the gun, and then remove it. Insert to the gun assembly key (42), insert the mandrel assembly (38) from the air valve set, insert needle to the mandrel and press lever to press out the seal roller (13) from the gun. Seal will remain on the key assembly (42), which then pull out from the gun. **(pic. b)**

» Use the assembly mandrel to press out the sealing from removed control bushing. Insert the mandrel (39) to the control bushing and screw-in the end stop screw (20) to press the sealing U1 (13) out of the control bushing.

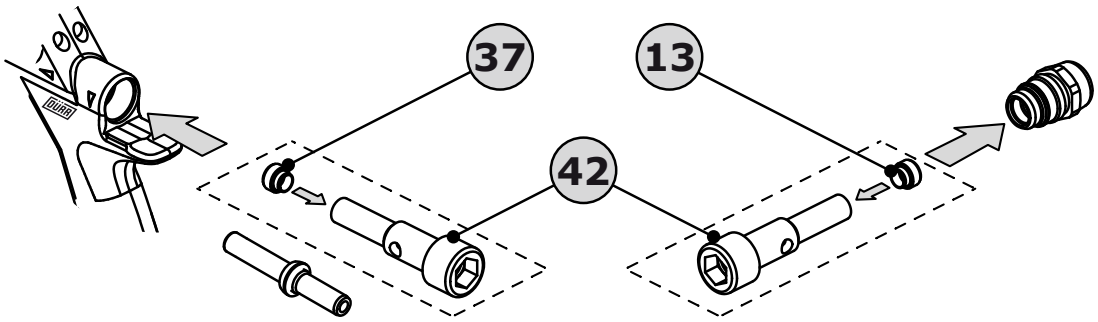
pic. a)



pic. b)



» **Assembly:** Insert the new sealing (37) from the air valve set to the assembly wrench (42) and tap it to the gun body. Similarly insert the sealing U1 (13) into disassembled control bushing.



» Insert new pin (15) from the set to body, screw-in the spring with control bushing to the body, insert needle and screw-in the end stop screw with spring and spring bearing.

We recommend to leave repairs to the authorised service centre, see service manual.

MAINTENANCE AND CLEANING

Cleaning and maintenance principles

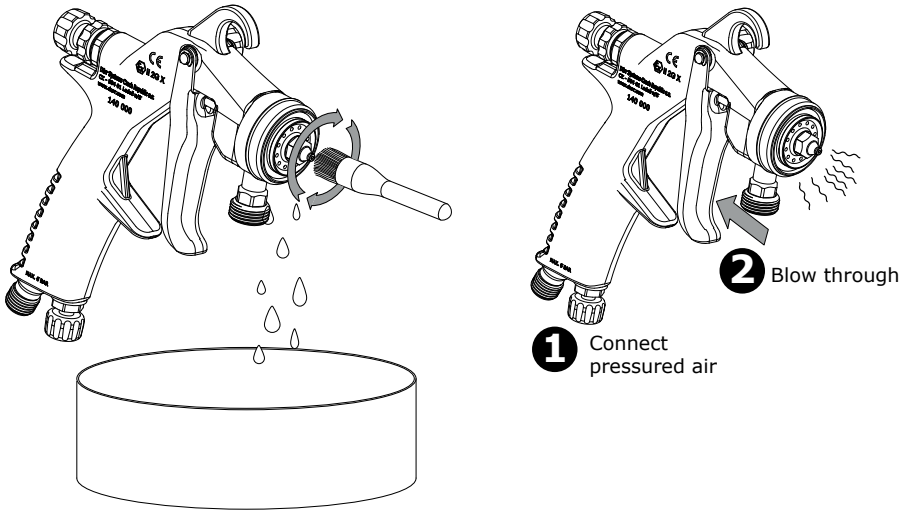
» Prevent drying of the coating material in the gun or on the surface. its removal (when dried) is difficult and may result in damage of smooth surface.

CAUTION

Do not use any metal items for cleaning!!!

» Clean the holes in the nozzle assembly very carefully, as this is the most important part affecting the spraying quality.

» During cleaning of the gun front part keep the gun with nozzle directing downward. thus the entry of solvent with residues of the coating material to gun air channels is prevented, as well as subsequent damage to the gun function. after each cleaning connect the gun to the pressure air supply and blow out the ai channels by actuation of lever.



» Pas NEEDED after cleaning grease the level bushing (27), operational part of the control screw (21) and threads of control screws with suitable grease (MOLYKOTE Cu 7439)

» The gun is washed in appropriate solvent corresponding to type of sprayed coating material. Pihe gun can be washed in the gun washing machine. However never immerse the gun to solvent and prevent long-term stay of gun in the solvent vapour area.

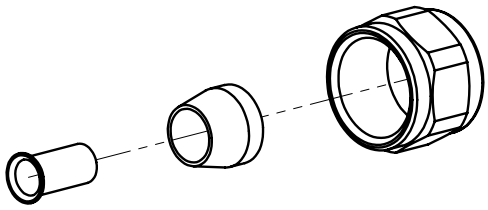
Important principles for high-quality function

» Proper choice of the assembly nozzle acc. to type of the coating material and size of the object (if you have any special requirements please contact the sales-technical depts. of the manufacturer).
» Properly treated air for spraying (free of dirt, water and oil – perfectly filtered).
» Filtered coating material of correct viscosity and free of dirt (follow and adhere to the instructions of the manufacturers of particular coating materials).
» Properly prepared (cleaned and maintained) spraying gun.
» Adhere to the recommended air pressure for atomising.

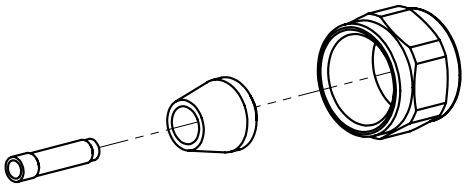
Aariants of NH supply

Type	Cat. No.	Set content
Hose set 8/6 (fig. 1)	907 436	Hose is not part of delivery
Hose set 6/4 (fig. 2)	907 437	Hose is not part of delivery

pic. 1



pic. 2



Other optional accessory

» Pressure control with separator
» Air contaminant separator
» Hose quick-couplings
» Hoses
» Compressor
» Personal protection equipments

OPERATION SAFETY

The product complies with regulations ad standards related to the products of such nature.

All employees authorised with operation and maintenance of the equipment shall be provably acquainted with safety and health regulations for work in paint shops and with the spraying gun operating and maintenance manual.

The operators shall perform training of the personnel and provide them with specified personal protecting equipments. Training, resp. more detailed information can provide the equipment supplier upon request.

RELATED STANDARDS

EN ISO 12100, EN ISO 13732-1, EN 894, EN ISO 4414, EN 1037+A1, EN 1070, EN 1127-1, EN 13463-1, EN 60079-0, EN 60721-3-7/A1, EN ISO 11204,

PRODUCT TESTING

» Each piece of equipments is subject to factory functional and pressure testing.

PRODUCT PACKING

» Depends on individual parts of the delivery.

DISPOSAL

» On expiration of the components, resp. gun operation life it may be disposed to the sorted waste material upon cleaning.

» The packing materials of the product (cat. no. 200101, see Decree of the Environment Protection Ministry no. 381/2001 Coll.) shall be disposed as mixed municipal waste. Used paper packing dispose to the separate waste material.

WARRANTY TERMS

» see service manual

The warranty is not provided

» For mechanical damage of rough handling with the product.
» For damage, wearing or fault caused by improper or non-adequate maintenance, abrasion, corrosion or use of non-original spare parts, components and materials.
» For non-allowed or non-professional intervention on the device.
» The warranty does not apply to easily worn components, such as sealing elements, springs and nozzle with needle, at which the wearing depends on abrasive properties of the applied materials, pressure and other circumstances

COMBINATIONS OF NOZZLE ASSEMBLIES

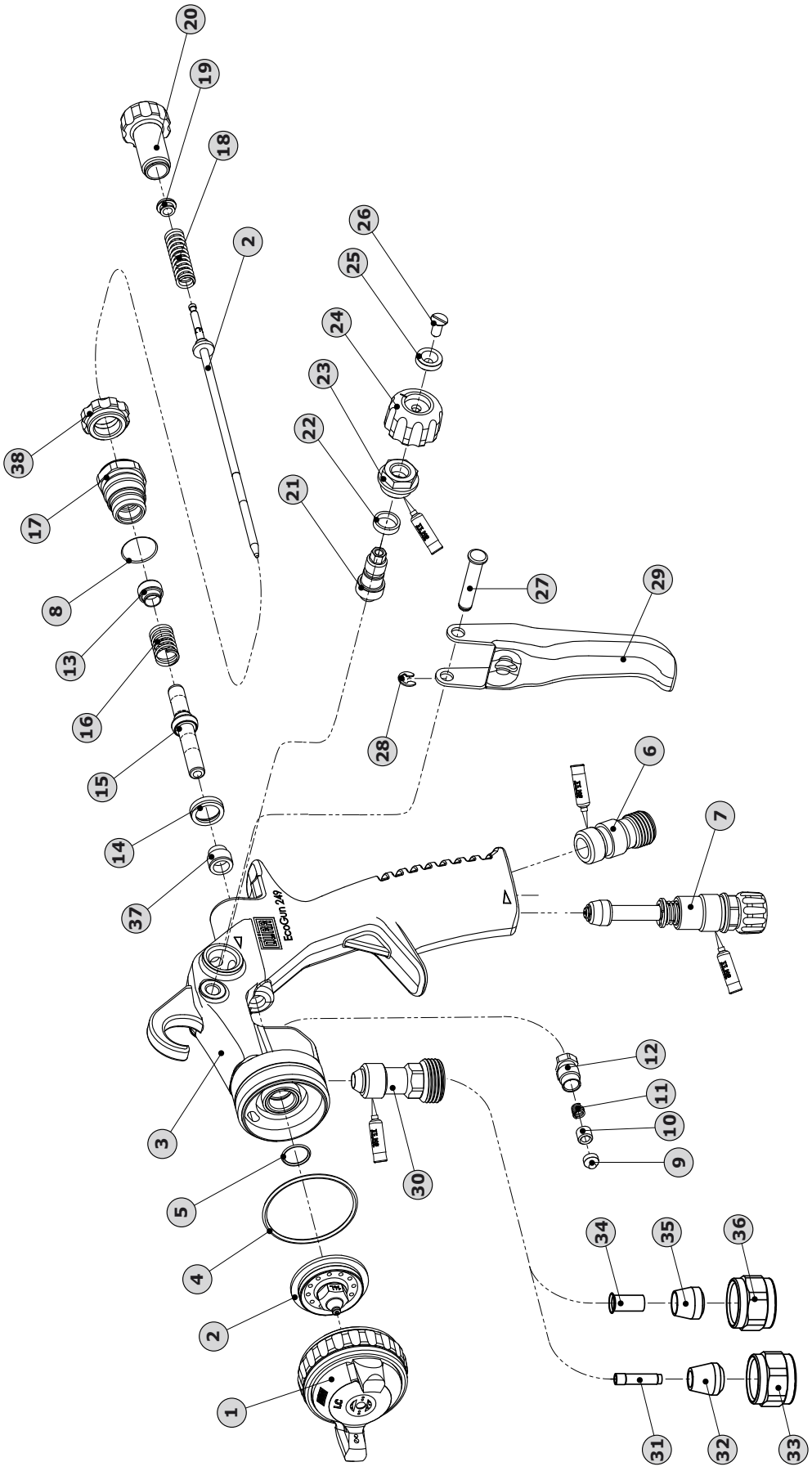
Air jet		Nozzle assembly	
Type	Identification no.	Type	Ident. no.
LP	908 435	08LP	908 438
		10LP	908 439
		12LP	908 440
LC	908 450	14LX	908 454
		16LX	908 455
		18LX	908 456
		20LX	908 457
		22LX	908 458

Nozzle set consists of nozzle with distribution plug and needle.

SPECIFICATION OF COMPONENTS

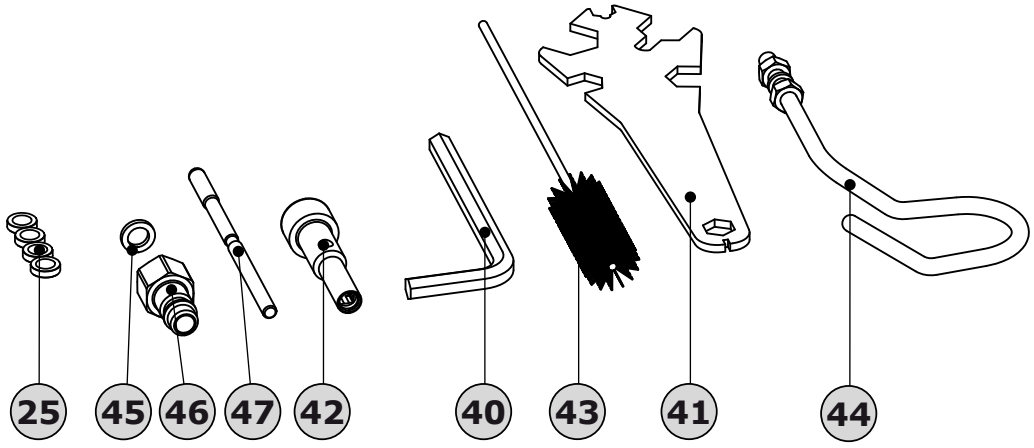
Position	Name	Identification No.	Quantity
1	Air Cap	Specified in table „Combinations of Nozzle Sets“	1
2	Nozzle Set		1
3	Body EcoGun 119	Not supplied	—
4	O-ring 33.3 x 1.6	105 081	1
5	O-ring	105 173	
6	Air Fitting	808 378	1
7	Air Supply Control	908 374	1
8	O-ring	105 031	1
9	Gland 70°	806 674	1
10	Spring Quide	806 675	1
11	Gland Spring	804 290	1
12	Gland Screw	806 466	1
13	Sealing U1	135 016	1
14	Piston Seat	135 017	1
15	Spindle	907 722	1
16	Spindle Spring	124 082	1
17	Bushing L	808 095	1
18	Pressing Spring	124 089	1
19	Bearing L	808 097	1
20	End Stop Screw	808 096	1
21	Control Screw	808 380	1
22	Sealing	806 948	1
23	Control Bushing	808 379	1
24	Control Wheel	806 464	1
25	Ring Set	906 439	1
26	Screw	114 247	1
27	Trigger pin	808 377	1
28	Ring 3,2	117 017	1
29	Trigger	806 510	1
30	Fluid connector AM 38	808 425	1
31	Reinforcement bushing	129 041	1
32	Clamping ring SF	806 882	1
33	Cap nut G 3/8“	807 433	1
34	Reinforcement bushing	129 014	1
35	Clamping ring SF	129 012	1
36	Cap nut G 3/8“	807 433	1
37	Sealing of the roller	135 002	1
38	Locking nut	807 709	1

Figures of components



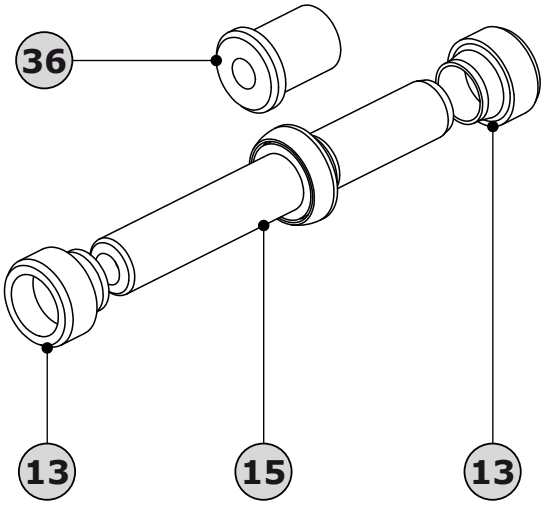
Accessory delivered with device

Position	Name	Identification no.	Quantity
40	Allen key size 7	152 019	1
41	Universal wrench	806 697	1
42	Assembly wrench	806 698	1
43	Cleaning brush	139 100	1
44	Gun hook	904 599	1
45	Sealing	807 708	1
46	Insert	128 670	1
47	Assembly rod	907 520	1
25	Ring set	906 439	1



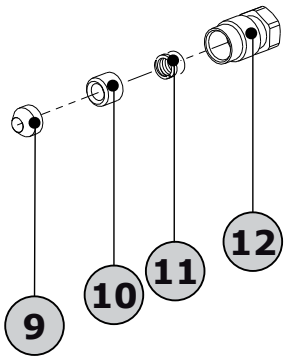
Air valve set - ident. number 907 964

Position	Name	Identification no.	Quantity
13	Sealing U1	135 016	1
15	Pin	907 722	2
37	Seal roller	135 002	1
39	Assembly mandrel	806 403	



Needle sealing set - ident. number 906 765

Position	Name	Identification no.	Quantity
9	Gland 70°	806 674	1
10	Spring guide	806 675	1
11	Gland spring	804 290	1
12	Gland screw	806 466	1



TROUBLESHOOTING

Fault	Cause	Remedy
The gun does not spray or spray intermittently	**Air released from nozzle**	
	» Empty vessel for coating material	» Add coating material - supply
	» Loose nozzle in gun body	» Properly tighten the nozzle
	» Damaged gland in gun body	» Replace the gland
	» Nozzle hole clogged	» Clean
	» Coating material amount control closed	» Set control
	No air from jet	
	» Closed air supply Closed air supply control	» Open supply Open air control on gun
Resulting spray curved or clubbed	» Dirt in annular section of jet and nozzle	» Remove dirt, do not damage jet
	» Damaged jet hole or nozzle neck	» Replace for a new one
	» Dirt in wing or auxiliary holes	» Clean, do not damage the holes
	» Improperly tightened jet	» Properly tighten the jet
Resulting spray features little colour in the middle	» To much air to wings	» Set proper amount by control of spray width
	» High air pressure for spraying	» Decrease the air pressure
	» Low viscosity of coating material	» Adjust viscosity acc. to manufacturer instructions
Low flatness of resulting spray	» Low amount of air to wings	» Set higher amount by control of spray width
	» Low air pressure for spraying	» Increase pressure
	» High viscosity	» Properly adjust and measure with viscosimeter

WARRANTY CARD

Title and type of product		Production number
EcoGun 249		
Output check	Production date	Dispatch
Stamp and signature		Date of sale

Warranty Servicing Activity

Responsibility for potential defects is driven by Czech Civil Code No. 89/2012.

The warranty period for the products of the Dürr Systems Czech Republic company is 36 months from the date of agreed sale supply, if not agreed otherwise in the business contract. The warranty period is extended in case of an acknowledged complaint by the time of arguable shutdown of the equipment, generally by the time between the reporting of the defect and its due removal.

In case of application of an acknowledgeable defect, whose removal would significantly exceed the agreed deadline, the interested party can ask for free lending of spare equipment for the necessary time.

The warranty does not apply to:

- Parts and materials of regular operating consumption stated in the documentation supplied with the product and parts, whose life span is adequate to application conditions;
- Defects arisen by inexpert use and maintenance of the product in conflict with the recommendations stated in the operating and maintenance manual;
- Defects arisen for reason of own modifications of the equipment and use of materials and parts that were not approved by the manufacturer for the operation of the equipment**.**

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